

## CLAIMS

What is claimed is:

1. A manufacturing method for improving the yield and production rate of a biaxial-oriented polypropylene pearly synthetic paper, which prefabricates the inorganic powder into a master-batch ( $M_1B$ ) in the manufacturing process of the pearly synthetic paper and said inorganic powder is merely blended with polypropylene (primary raw material) to reach the required dispersion in advance; the manufacturing method comprises the following procedures:
  - (1) two compositions, each of which comprising 93 ~ 20 % by weight of polypropylene, 0 ~ 30 % by weight of polyethylene, 5 ~ 30 % by weight of calcium carbonate master-batch ( $M_1B$  40 ~ 70 %), 2 ~ 15 % by weight of titanium dioxide master-batch ( $M_1B$  30 ~ 60 %), and 0 ~ 5 % by weight of ultraviolet rays absorbing agent, are respectively and evenly stirred in the feeders which are at the front ends of the two single-screw secondary extruders, further fed into and blended by the screws of the two single-screw secondary extruders respectively, then continuously and respectively extruded to the upper path and lower path of T-type die;
  - (2) in addition, a composition, comprising 93 ~ 36 % by weight of polypropylene, 0 ~ 5 % by weight of antistatic agent, 5 ~ 35 % by weight of calcium carbonate master-batch ( $M_1B$  40 ~ 70 %), 2 ~ 20% by weight of titanium dioxide master-batch ( $M_1B$  30 ~ 60 %), and 0 ~ 4 % by weight of ultraviolet rays absorbing agent, is evenly stirred in the feeder which is at the front end of the other double-screw primary extruder, further fed into and blended by the screw of the double-screw primary extruder, then continuously extruded to the middle path of T-type die;
  - (3) under the condition that the working temperature of the extruder device being set at the range of 180 degree C ~ 280 degree C, said three composition materials are, in the T-type die, co-extruded and molded to a 3-layer-laminated composition with a thickness of 25 ~ 250  $\mu$  having the upper and the lower layers being the resin layer or the paper surface layer, and the middle layer being the foamed intermediate layer; then further driven out from the outlet of T-type die into the cooling/shaping device;
  - (4) under a temperature of 15 degree C ~ 70 degree C, the cooling/shaping device cools down and shapes the 3-layer-laminated composition into a 3-layer-laminated sheet, then leads it to a longitudinal orientation device;
  - (5) the longitudinal orientation device first preheats and softens the 3-layer-laminated sheet at a temperature of 110 degree C ~ 150 degree C and then orients it with 3 ~ 6 times of longitudinal orientation ratio and tempers to fix the

shape; thereafter, the 3-layer-laminated sheet is further led to the transverse orientation device;

- (6) the transverse orientation device again preheats and softens the 3-layer-laminated sheet which has been longitudinally oriented at a temperature of 140 degree C ~ 190 degree C and then orients it with 5 ~ 13 times of transverse orientation ratio and tempers to fix the shape; thereafter, the 3-layer-laminated sheet which has been longitudinally and transversely biaxial-oriented is further cooled down at a temperature of 25 degree C and led to a corona discharge treatment device;
- (7) the corona discharge treatment device treats the longitudinally and transversely biaxial-oriented 3-layer-laminated sheet with a power of 20 ~ 120 KW of high frequency wave corona discharge to make the pearly synthetic paper have an even surface tension to compose a 3-layer co-extruded biaxial-oriented pearly synthetic paper with upper and lower layers being resin layer or paper surface layer and middle layer being foamed intermediate layer; and
- (8) the rolling device rolls up the manufactured 3-layer co-extruded biaxial-oriented pearly synthetic paper.
2. The manufacturing method for improving the yield and production rate of a biaxial-oriented polypropylene pearly synthetic paper as defined in claim 1, wherein the single-screw second extruder has an air-drawing device and the double-screw primary extruder has a sleeve air-drawing device.
3. The manufacturing method for improving the yield and production rate of a biaxial-oriented polypropylene pearly synthetic paper as defined in claim 1, wherein the inorganic powder which is first surface treated and then prefabricated into a master-batch ( $M_1B$ ) is selected from calcium carbonate, titanium dioxide, diatomaceous earth, clay, calcium oxide, silicon dioxide, or barium sulfate.
4. The manufacturing method for improving the yield and production rate of a biaxial-oriented polypropylene pearly synthetic paper as defined in claim 2, wherein the prefabricated inorganic master-batch ( $M_1B$ ) is made of two or more the following materials of calcium carbonate, titanium dioxide, diatomaceous earth, clay, calcium oxide, silicon dioxide, or barium sulfate.
5. The manufacturing method for improving the yield and production rate of a biaxial-oriented polypropylene pearly synthetic paper as defined in claim 2, wherein the diameter of the master-batch ( $M_1B$ ) prefabricated from inorganic powder is 0.1 ~ 10  $\mu$ .